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Synopsis of Saves

Solutions to actual machinery problems

A power station's 270 MW, 12 bearing, GE cross-compound turbine generator had been on-line for three days when plant personnel, using their Bently Nevada Dynamic Data Manager®, recorded high vibration levels at the HP Bearing No. 2. Bearing vibration and first stage shell temperatures were compared using a Westinghouse Historical Data Retriever (HSR). A shaft crack was correctly diagnosed from 1X amplitude changes although there was no change in phase. Using the ADRE® 3 System, the crack was detected when it was only 13% of the way through the shaft.

■ A power plant used their 3300 Turbine Supervisory Instrumentation (TSI) System to detect a bearing failure on their unit. Over time, the temperature on Bearing No. 2 gradually increased and the monitoring system went into alarm. Inspection through an existing shaft rider hole showed that the babbitt had melted and the bearing was wiped. The machine was closely monitored and run at a reduced load until its outage. When all the bearings were inspected during the outage, plant personnel noticed that two additional bearings were about to undergo the same problem as the No. 2 bearing. The problem was a disproportionate amount of lead in the bearing babbitt's composition.

During the outage, Transient Data Manager® (TDM) Communications Processors were installed on the unit and were tied to the plant's TDM2 System. During startup, the turbine experienced a rub during unit loading. The vibration steadily increased for two

minutes and finally exceeded the Danger setpoints. The unit tripped and plant personnel verified the rub. The unit was slow-rolled for several hours after inspection and was restarted without any problems. The customer is very pleased with their TSI Systems and rely on them exclusively for machinery monitoring.

■ At another power plant, a thrust locking bolt on a boiler feed pump loosened (backed out). The thrust probes on this pump view the thrust bolt at the end of the shaft and detected the movement, causing the 9000 Series Monitor to go into alarm. The plant's Operations Department notified plant management of the situation and the machine was shut down for inspection. Upon inspection, maintenance personnel found a locking key to be cracked half way through, allowing the thrust bolt to move. The plant's Instrument & Control foreman said the system saved the plant from a catastrophic machine failure.

■ A petroleum refinery recently installed six Bently Nevada 1900/25 Vibration Monitors on its pumps. The 1900/25 is a single channel vibration monitor which accepts input from a low cost accelerometer. A transducer was mounted on a charge pump; another transducer was mounted on the motor. A gearbox was located in between. High vibration levels caused the charge pump's Alert alarm to trip. When the gearbox was opened, there was no oil in the gearbox. Plant personnel were so impressed with the 1900/25 that they ordered several additional units. ■